In a preferred embodiment of this invention the Teleservice origination request is transmitted using a random access channel, the step of transmitting the at least one stored message includes a step of bypassing a voice coder and a data modem within the mobile station, and the step of transmitting the at least one stored message is accomplished in an Automatic Retransmission Request (ARQ) mode of operation.

In one embodiment of this invention the mobile station transmits an origination message having both Voice Mode and Data Mode fields set so as to inform the BMI that neither a vocoder or data modem are required to receive the mobile station's transmission. Having configured the BMI to receive a mobile station originated SMS transmission, the mobile station **10** transmits the SMS message on a digital traffic channel that is assigned by the BMI. In response, the BMI receives and demodulates the mobile station transmission and routes the received user data unit, along with appropriate identification and support information, to the SMS message center for subsequent processing in a conventional manner.

Further in accordance with this invention there is described a method to deliver Teleservices in a wireless communications system that are not constrained by any message length limitations imposed by the air interface or network layers supporting the wireless service. The method applies compression, encryption, segmentation and assembly services, end to end acknowledgment, retransmission of segments, and error detection and retransmission of the entire Teleservice transaction. This process is referred to herein as a Teleservice Transmission Service or TTS.

In accordance with this aspect of the invention a method is disclosed for operating a wireless communications network to transmit a Teleservices message from a source to a destination. The method includes the following steps:

(a) inputting to a Teleservice Transmission Service (TTS) a Teleservices message to be transmitted, the Teleservices message being input through a first TTS Service Access Point (SAP); (b) partitioning the Teleservices message into a plurality of smaller message segments each having a maximum size that is equal to or less than a specified maximum length of a message unit (e.g., an R-DATA message data length) for a DCCH message transport facility; and (c) outputting the message segments from the TTS through a second TTS SAP to an air interface service for transmission to the destination. The method further includes optional steps of compression and/or encrypting the Teleservices message and then (d) transmitting a first message from the source to the destination for specifying at least a total number of message segments to be transmitted, the first message also conveying a first message segment; (e) transmitting one or more second messages from the source to the destination, each second message conveying a further message segment and also specifying at least a number of remaining message segments; and (f) transmitting a final message from the source to the destination, the final message conveying a last message segment and also specifying the end of the Teleservices message.

Although described primarily in the context of the SMS Teleservice, it should be appreciated that the teaching of this invention applies as well to other types of Teleservices, including OATS, and also future Teleservices.

BRIEF DESCRIPTION OF THE DRAWINGS

The above set forth and other features of the invention are made more apparent in the ensuing Detailed Description of the Invention when read in conjunction with the attached Drawings, wherein:

FIG. **1** is a block diagram of a mobile station that is constructed and operated in accordance with this invention;

FIG. **2** is an elevational view of the mobile station shown in FIG. **1**, and which further illustrates a cellular communication system to which the mobile station is bidirectionally coupled through wireless RF links;

FIG. **3** is a logic flow diagram illustrating one method of this invention, specifically a mobile station implemented method of transmitting a SMS message over a digital traffic channel;

FIG. **4** is a logic flow diagram illustrating a second method of this invention, specifically a BMI implemented method of setting up and receiving a SMS message over a digital traffic channel;

FIG. **5** is a simplified block diagram illustrating signal and message flow through a Teleservice Transmission Service (TTS) in accordance with an aspect of this invention; and

FIG. **6** is a table illustrating a TTS message size spreadsheet.

DETAILED DESCRIPTION OF THE INVENTION

Reference is made to FIGS. **1** and **2** for illustrating a mobile terminal or station **10**, in particular a cellular radiotelephone or a personal communicator, that is suitable for practicing this invention. The mobile station **10** includes an antenna **12** for transmitting signals to and for receiving signals from a base site or base station **30**. The base station **30** is a part of a cellular network **32** that includes a mobile switching center (MSC) **34**, a SMS center **36**, voice coder/decoders (vocoders) VC **38**, data modems (DM) **40**, and other units required to operate the network. The MSC **34** is capable of routing calls and messages to and from the mobile station **10** when the mobile station is making and receiving calls. As was indicated above, the cellular network **32** may also be referred to as a Base Station/MSC/Interworking function (BMI).

The mobile station **10** includes a modulator (MOD) **14A**, a transmitter **14**, a receiver **16**, a demodulator (DEMOD) **16A**, and a controller **18** that provides signals to and receives signals from the transmitter **14** and receiver **16**, respectively. These signals include signalling information in accordance with the air interface standard of the applicable cellular system, and also user speech and/or user generated data. The air interface standard is assumed for this invention to include at least SMS and/or OATS capability. One suitable type of Teleservice capability is defined in Section 7 of IS-136.1, Rev. A., as modified by the teaching of this invention.

A user interface includes a conventional speaker **17**, a conventional microphone **19**, a display **20**, And a user input device, typically a keypad **22**, all of which are coupled to the controller **18**. The keypad **22** includes numeric and alphanumeric keys, related keys (#,*) **22***a*, and also other keys **22***b* used for operating the mobile station **10**. These other keys **22***b* may include, by example, a SEND key, various menu scrolling and soft keys, and a PWR key. The mobile station **10** also includes a battery **26** for powering the various circuits that are required to operate the mobile station.

The mobile station **10** also includes various memories, shown collectively as the memory **24**, wherein are stored a plurality of constants and variables that are used by the controller **18** during the operation of the mobile station.

For example, the memory **24** stores the values of various cellular system parameters and the number assignment mod-